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Agricultural
Marketing
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Poultry-Grading Manual

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Revised June 1989

I. Introduction

This manual is a guide to the uniform application of the U.S. Department of Agriculture (USDA) classes, standards, and grades for poultry. Although designed primarily to aid poultry graders, it should prove useful to those teaching poultry marketing and to the poultry industry.

Besides information about the classes, standards, and grades for poultry (sections III and IV), this manual also covers the voluntary poultry grading program (section II) and the grading of poultry for compliance with special purchase requirements (section V).

Information on the grading of live poultry (section VI) is included for the use of student judging teams, vocational agriculture classes, and college agriculture courses.

The entire manual can serve as the course outline for a poultry grading school. Other resource material related to poultry grading (section VII) is also listed.

II. Poultry Grading Program and Services

Grading is the classifying and sorting of poultry and poultry products according to various groups of conditions and quality characteristics.

- Ready-to-cook poultry carcasses and parts, as well as certain poultry products, may be graded for quality according to official standards and grades. Sections III and IV provide information about the U.S. classes, standards, and grades.

- Ready-to-cook poultry may be certified as meeting the special requirements of a buyer's purchase contract or specification. Section V includes information about certification-type grading.

- Certificates or other documents may also be issued relative to the product graded.

These grading services aid in the nationwide marketing of poultry and poultry products. They change from time to time as the types of products available change. Today, less than 25 percent of all chickens and less than 20 percent of all turkeys are marketed as whole birds. The rest reach the market in value-added forms, such as cut-up parts, boneless and/or skinless cuts, and further processed products. These products include a growing variety of freshly prepared ready-to-cook, as well as pre-cooked, refrigerated poultry entrees. This array of poultry and poultry products can usually be found year-round in the fresh and frozen meat sections of the food store.

The development of grade standards and the identification and certification of class, quality, quantity, and condition of agricultural products is authorized by the Agricultural Marketing Act of 1946 (AMA). Regulations to implement the AMA were developed in cooperation with State agriculture officials, producers, processors, and consumers.

The use of grading is voluntary, but anyone using it must pay for it. Those who do apply for service must also provide the space, equipment, lighting, or other facilities that are needed by the grader or are required by the regulations. In addition, when grading is performed in a plant, the plant and its facilities must be approved by USDA.

Regulations also provide penalties for the misuse of grading, such as the false representation that poultry has been officially graded. Products labeled with the terms "prime," "choice," and "select," which indicate superior or top quality, must be equivalent to U.S. Grade A.

The letters "U.S." or "USDA" may only be used with a poultry grademark if the poultry has been graded by an authorized grader. The letter grades A, B, or C may only be used without the grademark if the product has been graded by a USDA grader and meets the requirements of the appropriate letter grade. The words "Prepared From," or similar wording, may

only be used with the U.S. grademark if the product was produced from graded poultry.

A. The Poultry Division

The voluntary poultry grading program is administered by the Poultry Division of USDA's Agricultural Marketing Service. The Division's national office oversees regional and State offices that supervise graders stationed across the country.

Resident grading is usually performed by a grader assigned to a specific processing plant on a full-time or part-time basis. If more than one grader is assigned to a plant, one of them will be designated as the grader-in-charge.

Most plants process large volumes of poultry and resident graders are assisted by plant employees authorized to grade. The authorized grading personnel grade the poultry according to quality. The resident graders perform final check-grading and certification.

Resident grading costs include an amount equal to the salary of the resident grader, plus a charge based on the volume of product handled in the plant to cover supervisory and administrative costs. The cost per pound of poultry for this service is generally little more than that incurred by plants employing their own graders.

Most grading services provided to resident plants are also available on a temporary plant basis. That is, on an as-needed basis. Temporary plant fees are based on the time needed to do the work.

Fee grading is performed when an applicant requests grading of a particular lot or carload of poultry, often for compliance with special contract requirements. Requests for this type of service are usually made on an irregular basis and the charges are based on the time needed to do the work. Most fee grading work is done at locations other than processing plants, such as distribution facilities or destination points.

Cooperative agreements between USDA and various State agencies set forth procedures for the collection and disbursement of fees.

Under a State Trust Fund agreement, arrangements for service are between the State and the individual firms, with the concurrence of USDA. Fees are collected by the State. USDA is reimbursed by the State for Federal supervision of the program.

Under a Federal Trust Fund agreement, applications for service are between USDA and the individual firms. Fees are collected by USDA. The State is paid by USDA for the costs it incurs performing grading work and supervision.

B. Poultry Eligible for Grading

The **kinds** of poultry that may be graded include, but are not limited to, chickens, turkeys, ducks, geese, pigeons, and guineas. The **form** may be as a ready-to-cook carcass or part or as a further processed product.

All poultry that is graded must first be inspected. **Inspection** refers to the wholesomeness of poultry and its fitness for food. It is not concerned with quality or grade. The inspection mark means that the poultry has passed examination by a qualified USDA veterinarian or inspector during slaughter and/or processing. All slaughter plants are supervised by a USDA veterinarian. Plants which apply for inspection service and are accepted are known as official establishments.

Under the Poultry Products Inspection Act of 1957, USDA provides mandatory Federal inspection of poultry and poultry products shipped in interstate or foreign commerce. The Wholesome Poultry Products Act of 1968 strengthened that law and opened the way for vastly improved State poultry inspection systems.

All poultry slaughtered for human food destined for sale in commerce must be processed, handled, packaged, and labeled in accordance with the Act and its regulations. Mandatory Federal inspection service, except for overtime and holiday work, is paid for by the Government.

States with inspection systems equal to the Federal program conduct inspection in plants shipping only within that State. In States without such programs, intrastate plants are also under Federal inspection.

Voluntary inspection service for squab and game birds is provided under authority of the AMA and the cost is paid by the applicant.

Administration of both mandatory and voluntary Federal inspection is the responsibility of USDA's Food Safety and Inspection Service.

After poultry has passed inspection and is ready to be graded, the grader must be sure that it is still in a wholesome **condition** to be graded. Ready-to-cook poultry that is off-condition (slimy or slippery condition of the skin, putrid or sour odor) is ineligible for grading.

In addition, ready-to-cook poultry showing other non-acceptable conditions cannot be graded. If the grading is done at the processing plant, the poultry must be sent back for reworking. If the grading is performed elsewhere, the number of carcasses or parts found with these conditions would be recorded, and the lot would be ineligible for grading. These conditions include protruding pinfeathers, bruises requiring trimming, lungs incompletely removed, parts of the trachea present, feathers, or extraneous material of

any type inside or outside of the carcass (i.e., fecal material, blood, grease, gall stains, dirt, metal, wood).

C. Official Identification Marks

Labels bearing the inspection mark and the grademark must be approved by USDA.

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

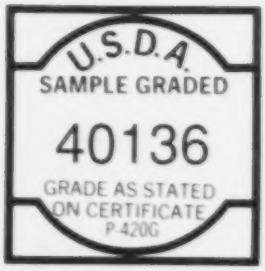


Figure 6

Figure 7

Figure 8

Figure 9

Figure 10

The **inspection mark** (fig. 1) is required on consumer containers and shipping containers of poultry inspected under the Poultry Products Inspection Act.

Marks on Consumer Containers

The **grademark** must either be printed with light-colored letters on a dark field (fig. 2) or dark-colored letters on a light field (fig. 3).

Any **wing tag** (fig. 4), insert label, or other label which bears the inspection mark, the grademark, or both, must also show either the plant number or the firm name and address. When both marks are shown on a tag, they must appear on the same side of the tag, or they may appear on both sides of the tag. Wing tags of shield design may not be used for showing the inspection mark only, but may be used to show both marks or the grademark only. Wing tags bearing the grademark must show the class of the product.

Marks on Shipping Containers

The **grademark** (fig. 5) is used on a container to designate a consumer grade. The date the product was graded shall be used in conjunction with the grademark when applied by stamping. Preprinted grademarks do not require a date.

The **sample graded stamp** (fig. 6) is used when grade certification is made in conjunction with other factors, such as test weighing and temperature certification. This stamp may only be used when a certificate is actually issued and shall show the certificate number in the stamp. It is not used for condition certification of nongraded product for Puerto Rico.

The **contract compliance stamp** (fig. 7) is used when identifying product that has been produced according to approved specifications and is not to be applied until product is determined to be in compliance with all contract requirements. Either the certificate number or the date the product was certified may be used in the stamp, but the certificate number is preferred.

The **provisional stamp** (fig. 8) is used on poultry graded for military contracts for troop issue and or resale when purchased under military "orders for subsistence." It is also to be used on Veterans Administration products when purchased on Defense Procurement Supply Center purchase contracts. The certificate number is in this stamp. It is to be applied at the time the product is determined to be in compliance with all contract requirements.

The **lot stamp** (fig. 9) may be used to identify product that has been graded according to special purchase requirements, such as product for commodity purchase programs placed in a freezer until sufficient quantities accumulate for subsequent sale and delivery. It may also be used to identify further processed items produced according to approved specifications. The consecutive day of the year when the product was graded is in this stamp.

The **officially certified mark** (fig. 10) is used on poultry sampled for temperature, condition, weight, or other certifications where the grade is not referenced on the certificate or when product is not identified with an official grade. This stamp may be used only when a certificate is actually issued and shall show the certificate number in the stamp. It is used for condition certification of nongraded product for Puerto Rico.

III. Grading According to Quality Standards and Grades

Quality refers to the inherent properties of a product that determine its relative degree of excellence or value. Experience and research have identified certain properties in poultry that are desired by producers, processors, and consumers. Some of these properties are a good proportion of meat to bone, adequate skin covering, absence of pinfeathers, and freedom from discolorations.

Standards of quality enumerate the factors that affect these properties and apply to individual ready-to-cook poultry carcasses, parts, and products. There are no grade standards for giblets, detached necks and tails, wing tips, and skin.

For carcasses and parts, the factors include conformation, fleshing, fat covering, exposed flesh, and discolorations. For poultry products, factors besides those already mentioned include presence of tendons and blood clots as well as product-specific factors.

Grades apply to lots of poultry of the same kind and class, each of which conforms to the requirements for the grade standard. The U.S. consumer grades for poultry are U.S. Grades A, B, and C.

Grading involves evaluating poultry in terms of the standards to determine the grade. Figures 11 and 12 show A and B quality chickens and turkeys. A given lot of poultry may contain a small percentage of a quality lower than the grade specified because some defects are permitted. This is an unavoidable necessity due to today's production-type processing methods.

Poultry grade standards have changed over the years to reflect developments in poultry production, processing, and marketing. Standards for ready-to-cook poultry were added to the regulations in 1950, roasts were added in 1965, parts and certain products were added in 1969, and all provisions for grading live and dressed poultry were eliminated in 1976. As the need arises and meaningful quality factors are established for other products, additional grade standards will be developed.

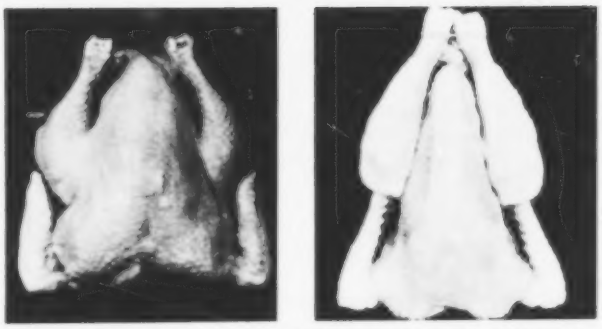


Figure 11. Ready-to-cook young chickens: (a) A quality; (b) B quality (Negative Nos. 89BW0490-7, 89BW0117.)

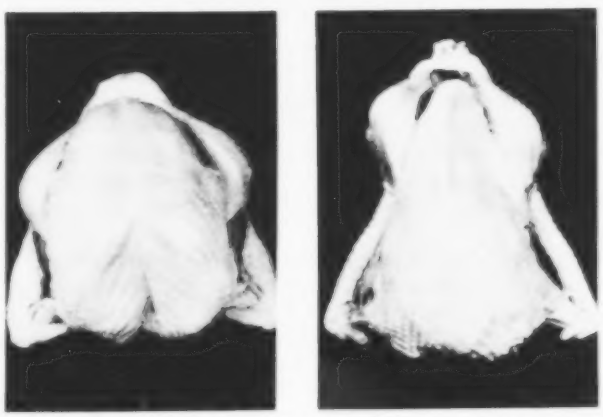


Figure 12. Ready-to-cook young turkeys: (a) A quality; (b) B quality (Negative Nos. 89BW0490-2, 89BW0119.)

A. Uses of Standards and Grades

Standards and grades are used extensively throughout the marketing system.

- Grade standards furnish an acceptable common language that buyers and sellers use in trading and that market news reporters use when communicating about market prices and supplies.
- Poultry firms that base the price paid to the grower on grade yields will grade the product to USDA standards.
- Processors request grading service so that they may use the official grademark on each bird or package.
- The Department of Defense, airlines, grocery stores, fast-food restaurants, hospitals, schools, and other large-scale food buyers specify USDA graded poultry products in their purchasing contracts.
- Commercial firms use the standards and grades as a basis for their own product specifications, for advertising, and for establishing brand names.
- Firms participating in the Department s Export Enhancement Program must use USDA s grading services.
- Anyone with a financial interest in a lot of processed poultry may apply to USDA to have an official grade designation placed on the lot or may use the grades as the basis for negotiating loans, settling disputes involving quality, or paying damage claims.

B. Examining Carcasses and Parts to Determine Quality

In today's high-volume processing operations, poultry is initially graded by plant employees specifically authorized by USDA to perform this work. Subsequently, the product is checkgraded by a USDA grader to determine compliance with applicable grade standards.

Poultry being graded should be approximately reading distance from the grader's eye. Graders who require reading glasses should use them, especially when grading white-feathered birds where minute pinfeathers, hairs, and small wet feathers are hard to see.

Each carcass or part, including those used in preparing a poultry food product bearing the grademark, must be graded and identified in an unfrozen state on an individual basis. The class must also be determined since the quality factors of fat, fleshing, and conformation vary with the age and sex of the bird.

Most carcasses and parts are graded on the line or out of the cooler. Whole carcasses can be examined by grasping the hocks of the bird in one hand with the breast up. In this position, the grader can easily observe the breast, wings, and legs, and by a mere twist of the wrist, the back of the bird can be turned into position to be observed. When parts are graded, the side nearest the grader should be examined first, then the part turned around so the opposite side can be examined.

The usual procedure is to decide on the fleshing and fat covering factors first. This makes it easier to decide on the other factors. The intensity, aggregate area, location, and number of defects must also be evaluated. In each quality level there are maximum defects permitted, some varying with the weight of the ready-to-cook carcass.

The final quality rating is based on the factor with the lowest rating. Thus, if the requirements for A quality are met in all factors except one, and this factor is B quality, the final grade designation would be "B". The carcass or part is then placed in the proper grade location by the grader or by an electronically controlled computer system.

When the resident grader checkgrades the product, the acceptable quality level (AQL) procedures used are based on the percent of defective undergrade birds or parts present. If the AQL results show that there are excessive undergrades, the grader will work with plant management to identify and correct the problem.

C. Quality Factors for Carcasses and Parts

The following factors must be considered when determining the quality of an individual ready-to-cook carcass or part.

Conformation

The structure or shape of the bird may affect the distribution and amount of meat, while certain defects detract from its appearance. Some of the defects that should be noted are breasts that are dented, crooked, knobby, or V-shaped; backs that are crooked or hunched; legs and wings that are deformed; and bodies that are definitely wedge-shaped.

Fleshing

The drumsticks, thighs, and breast carry the bulk of the meat. There is, however, a definite correlation between the covering of the flesh over the back and the amount of flesh on the rest of the carcass. Females almost invariably carry more flesh over the back and will generally have a more rounded appearance to the breast, thighs, and legs.

The common defects in fleshing are breasts that are V-shaped or concave, rather than full and rounded; breasts that are full near the wishbone, but taper sharply to the rear; legs and drumsticks that are thin; and backs that have insufficient flesh to cover the vertebrae and hip bones.

Fat Covering

Fat in poultry is judged entirely by accumulation under the skin. This is true even for chicken parts. Accumulations occur first around the feather follicles in the heavy feather tracts.

Poorly fattened birds may have some accumulation of fat in the skin along the heavy feather tracts on the breast. Then, accumulations will be noted at the juncture of the wishbone and keel and where the thigh skin joins the breast skin. At the same time, accumulations will be noted around the feather follicles between the heavy feather tracts and over the back and hips. Well-finished older birds will have sufficient fat in these areas and over the drumsticks and thighs so that the flesh is difficult to see. Fowl which have stopped laying have a tendency to take on excessive fat in the abdominal area. Younger birds will generally have less fat under the skin between the heavy feather tracts on the breast and over the drumsticks and thighs than mature birds.

Pinfeathers
Processors try to eliminate the problem of pinfeathers, particularly those just coming through the skin, by moving poultry to slaughter after feathering cycles are over. There is, for instance, a very short period within which the slaughtering of ducklings must be done. With other classes, the period is longer and attention is given primarily to noting if the bulk of the pins have sufficient brush on them to facilitate picking.

Two types of pinfeathers are considered in grading—protruding and nonprotruding. Protruding pinfeathers have broken through the skin and may or may not have formed a brush. Nonprotruding pinfeathers are evident but have not pushed through the outer layer of skin.

Before a quality designation can be assigned, ready-to-cook poultry must be free of protruding pinfeathers that are visible to a grader during examination of the carcass at normal operating speeds. However, a carcass may be considered as being free from protruding pinfeathers if it has a generally clean appearance (especially on the breast) and if not more than an occasional protruding pinfeather is in evidence during a more careful examination of the carcass.

Vestigial feathers; hair on chickens, turkeys, guineas, and pigeons; and down on ducks and geese must also be considered.

Exposed Flesh, Cuts, Tears, and Broken Bones
Exposed flesh can result from cuts, tears, missing skin, or broken or disjointed bones. It detracts from the appearance of the carcasses and parts and permits the flesh to dry out during cooking, thus lowering the eating quality. The number and extent of such defects permitted depend on their location—whether on the breast or legs or elsewhere.

Skin Discolorations and Flesh Blemishes and Bruises
Most poultry is packaged in material that reduces exposure to air. However, in time the skin will still dry out and become discolored. If drying has occurred, the size of the areas is taken into consideration as a discoloration.

Firms marketing poultry in areas that prefer a yellow finish on chicken will scald at lower temperatures (124 to 126 F), thus leaving the cuticle (bloom) on the chicken and enhancing its yellow appearance. For the fast-food market wanting batter/breaded fried products or customers preferring a white appearance on poultry, firms will scald poultry at higher temperatures (132 to 136 F) to remove the cuticle. This enhances the bonding of the batter/breading to the chicken skin, but extra precautions must be taken to reduce the exposure of the product to air.

Bruises in the flesh or skin are permitted only to the extent that there is no coagulation or clotting (discernible clumps of red cells). Small clots in the skin or on the surface of the flesh may be cut to allow them to leach out in the chilling process. Such cuts would be taken into consideration in determining the quality. Blue or green bruises must be removed before grading. Excessive grade loss because of bruises should be called to the attention of management.

Some breeds of older turkeys may have a condition called "blue back" that causes a discoloration over the back and wings. Occasionally chickens may have a bluish or bluish-green color in the body lining. These discolorations detract from the appearance and are included in the total aggregate areas permitted for discolorations.

Freezing Defects
Discoloration and dehydration of poultry skin during storage is commonly called "freezer burn." This defect detracts from the appearance and, in the case of either moderate or severe freezer burn, lowers the quality of the poultry.

Other freezing defects are darkening of the meat due to slow freezing and seepage of moisture from a defrosting product, resulting in clear, pinkish, or reddish layers of ice.

D. Cutting Poultry Parts
The USDA standards of quality apply to poultry parts cut in the manner described below and illustrated in figures 13-23. These descriptions were originally developed when parts were cut from a carcass by hand. Today, many processors disjoint whole carcasses by machine. Machine-cut parts may also be graded as long as they are not misshapen and have nearly the same appearance as they had prior to cutting from the carcass. Under certain conditions, parts cut in other ways may also be officially identified when properly labeled. Skin or fat not normally associated with a part may not be included unless stated on the label.

The illustration of the skeleton of a chicken (fig. 24) shows the points where the parts are cut and gives the names of the skeletal parts.

Halves (fig. 13) are prepared by making a full-length back and breast split of the carcass so as to produce approximately equal right and left sides. Portions of the backbone

must remain on both halves. The cut may be no more than one-fourth inch from the sternum (breastbone).

Figure 13. Half. (Negative No. 89BW0121.)

Quarters (fig. 14) consist of the entire eviscerated poultry carcass which has been cut into four equal parts, excluding the neck.

"Breast quarter" consists of half a breast with the wing and a portion of the back attached.

"Breast quarter without wing" consists of a front quarter of a poultry carcass from which the wing has been removed.

"Leg quarter" consists of a thigh and drumstick, with a portion of the back attached. It may also include attached abdominal fat and up to two ribs. A leg with a complete or entire rear back portion attached may also be grade identified if certain criteria are met.

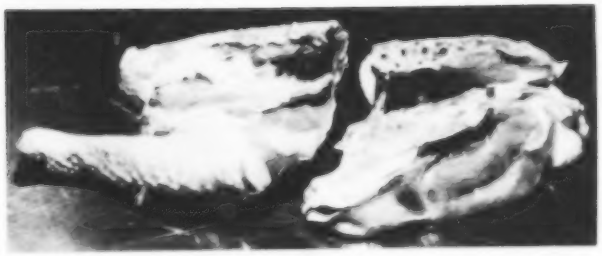
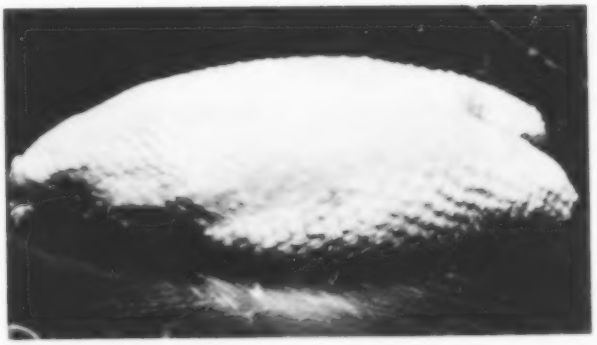


Figure 14. Quarter. (Negative No. 89BW0122.)

Breasts (fig. 15) are separated from the back at the shoulder joint and by a cut running backward and downward from that point along the junction of the vertebral and sternal ribs. The ribs may be removed from the breasts, and the breasts may be cut along the breastbone to make two approximately equal halves; or the wishbone portion, as described later in this section, may be removed before cutting the remainder along the breastbone to make three parts. Pieces cut in this manner may be substituted for lighter or heavier pieces for exact weight-making purposes, and the package may contain two or more of such parts without affecting the appropriateness of the labeling as "chicken breasts." Neck skin is not included with the breasts, except that "turkey breasts" may include neck skin up to the whisker.



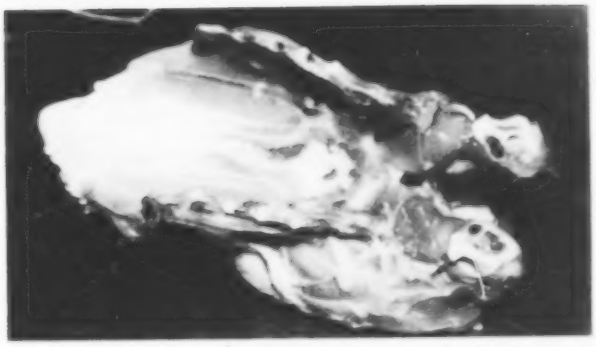


Figure 15. Breast. (a) external view, (b) internal view. (Negative Nos. 89BW0123, 89BW0124.)

Breasts with ribs (fig. 16) are separated from the back at the junction of the vertebral ribs and back. Breasts with ribs may be cut along the breastbone to make two approximately equal halves; or the wishbone portion may be removed before cutting the remainder along the breastbone to make three parts. Pieces cut in this manner may be substituted for lighter or heavier pieces for exact weight-making purposes, and the package may contain two or more of such parts without affecting the appropriateness of the labeling as "breasts with ribs." Neck skin is not included, except that "turkey breasts with ribs" may include neck skin up to the whisker.

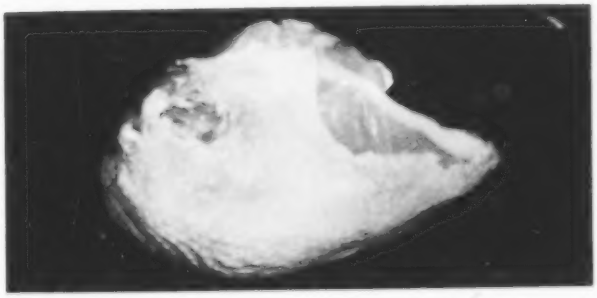


Figure 16. Breast with ribs. (Negative No. 89BW0479-5.)

Split breasts with back portion or breast halves with back portion (fig. 17) do not require centering of the cut to make two approximately equal halves if labeled "split breast".

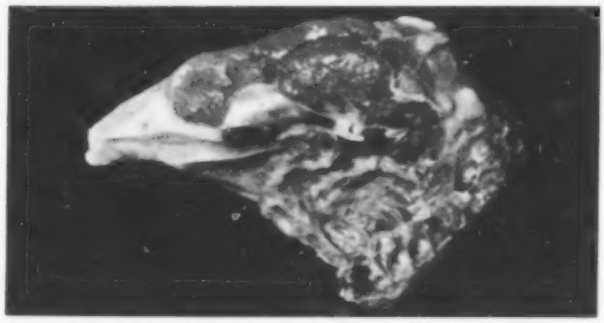
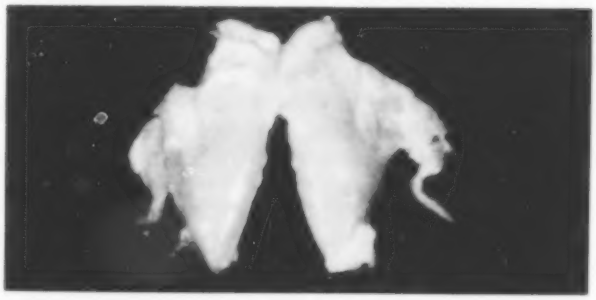


Figure 17. Split breast with back portion or breast half with back portion. (Negative No. 89BW0479-1.)

Boneless-skinless breasts (fig. 18) shall be prepared from breasts cut as described for figure 15. After deboning, they shall be free of tendons, cartilage, bone pieces, blood clots, discolorations, and undue muscle mutilation.

"Boneless-skinless breast with rib meat" consists of a breast cut as described for figure 16.



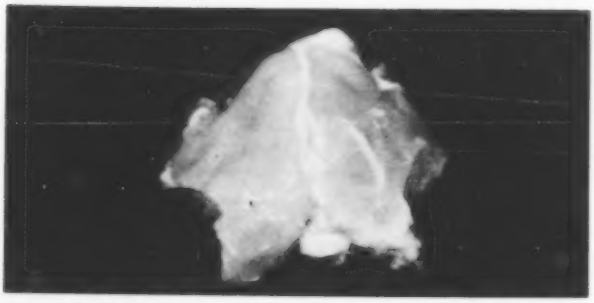


Figure 18. Boneless-skinless breast: (a) with rib meat, (b) without rib meat. (Negative Nos. 89BW0127, 89BW0128.)

Wishbones (pulley bones) (fig. 19) with covering muscle and skin tissue are severed from the breast approximately halfway between the end of the wishbone (hypocledium) and from point of the breastbone (cranial process of the sternal crest) to a point where the wishbone joins the shoulder. Neck skin is not included.

Figure 19. Wishbone. (Negative No. 89BW0129.)

Figure 20. Leg. (Negative No. 89BW0130.)

Legs (fig. 20) include the whole leg; i.e., the thigh and the drumstick, whether jointed or disjointed. Back skin is not included.

"Legs with pelvic bone" consists of a poultry leg with adhering meat and skin and pelvic bone.

The patella (kneebone) may be included on either the drumstick or thigh.

Thighs (fig. 21) are disjointed at the hip joint and may include the pelvic meat but shall not include the pelvic bones. Back skin is not included.

"Thigh with back portion" consists of a poultry thigh with back portion attached.

Thighs may also include abdominal meat (flank meat), but shall not include rib bones.

Drumsticks (fig. 21) are separated from the thigh by a cut through the knee joint (femorotibial and patellar joint) and from the hock joint (tarsal joint).

Figure 21. Drumstick on left, thigh on right. (Negative No. 89BW0131.)

Wings (fig. 22) include the entire wing with all muscle and skin tissue intact, except that the wing tip may be removed.

"Wing drummette" consists of the humerus (first portion) of a wing with adhering skin and meat attached.

Figure 22. Wing. (Negative No. 89BW0132.)

Backs (fig. 23) include the pelvic bones and all the vertebrae posterior to the shoulder joint. Note: When labeled "back rear portion," product is permitted to carry the Grade C identification when applicable grade criteria are met. The meat may not be peeled from the pelvic bones. The vertebral ribs and/or scapula may be removed or included. Skin shall be substantially intact. Grade standards may be applied when necks are packed with backs if certain procedures are followed.

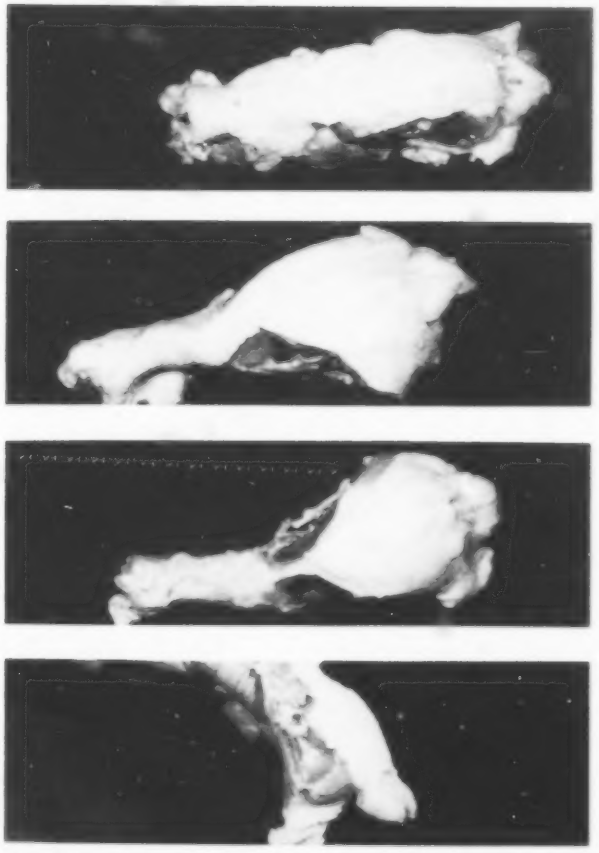


Figure 23. Back. (a) A quality; (b) B quality; (c) C quality; (d) C quality. (Negative Nos. 89BW0133, 89BW0134, 89BW0135, 89BW0136.)

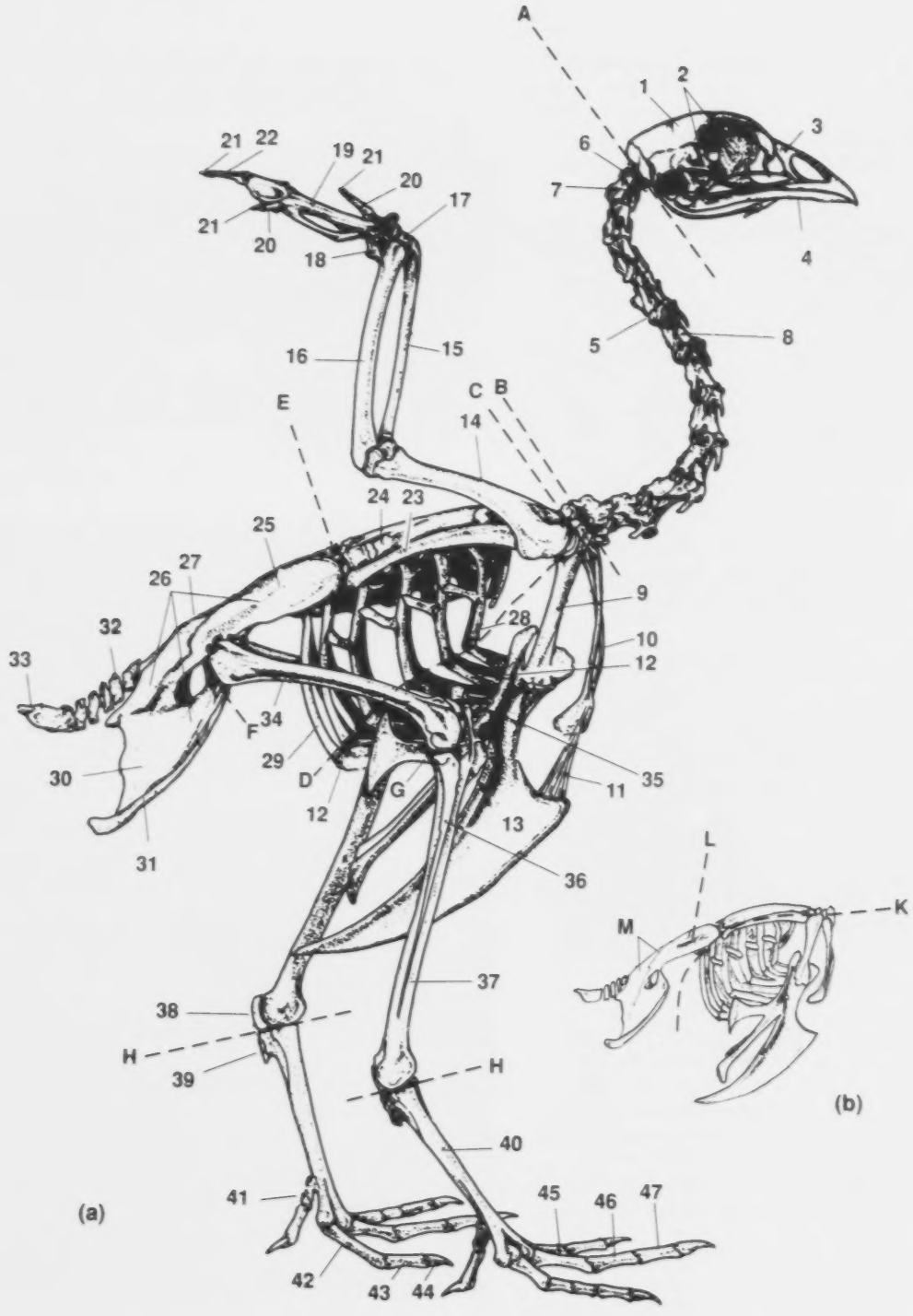


Figure 24. Skeleton of a chicken. (Negative No. 89BW0137.)

Figure 24(a). Whole chicken skeleton.
Bones are identified with the numbers listed below.

Head
1 Vertebral cranium (lateral parietal crest)
2 Orbital fossa
3 Visceral cranium (lateral ramus of nasal bone)
4 Mandibula (mandible, lower jaw)

Neck
5 Region of the ligamentum nuchae (main ligament of the neck)
6 Atlas - First cervical
7 Axis - Second cervical
8 Cervical vertebrae

Breast
9 Coracoid
10 Clavical - Wishbone
11 Hypocledial ligament
12 Sternal rib portion
13 Sternum - Keelbone

Wing
14 Humerus
15 Radius
16 Ulna
17 Radial carpal
18 Ulnar carpal
19 Third carpometacarpal
20 First phalanges
21 Distal phalanges
22 Second phalanx, third digit

Back
23 Scapula
24 Thoracic vertebrae
25 Ilium
26 Os innominatum
27 Synsacrum
28 Second rib
29 Vertebral rib portion
30 Ischium
31 Pubium - Pinbone

Tail
32 Coccygeal vertebrae
33 Urostilus - Pygostyle

Leg
34 Femur
35 Patella - Knee cap
36 Fibula
37 Tibia
38 Hypotarsal sesamoid

Foot
39 Hypotarsal ridge
40 Tarsometatarsus (second, third, and fourth)
41 First metatarsal
42 First phalanx, second digit
43 Second phalanx, second digit
44 Distal phalanx, second digit
45 First phalanx, third digit
46 Second phalanx, third digit
47 Third phalanx, third digit

Points where parts are cut in accordance with USDA regulations are identified with the letters listed below.

A - Head from neck
B - Neck from breast/back
C - Wing from breast
D - Breast from back
E - Front half of back from back half of back
F - Leg from back
G - Thigh from drumstick
H - Drumstick from foot

Figure 24(b). Breast and back of chicken skeleton.
Rib and pelvic meat areas and point to cut breast with ribs are identified with the letters listed below.

K - Breast with rib cut
L - Oyster meat area
M - Pelvic meat area

IV. U.S. Classes, Standards, and Grades for Poultry

This section contains (1) classes of ready-to-cook poultry; (2) standards for quality of ready-to-cook individual carcasses and parts, plus a table summarizing the standards (table 4) and a guide for estimating the relative size of exposed flesh or discolorations (fig. 25); (3) standards for quality of specified poultry food products; and (4) grades for ready-to-cook poultry and specified poultry food products.

A. Classes of Ready-to-Cook Poultry

The different species of poultry are the "kinds" of poultry, such as chickens, turkeys, ducks, geese, guineas, and pigeons. Each kind of poultry is divided into classes which have essentially the same physical characteristics, such as fryers or hens. These physical characteristics are associated with the age and sex of the bird. The class, if questionable, can best be determined when the bird is prepared into ready-to-cook form, by complete examination of the physical characteristics. This must be done before evaluating the quality factors. The classes are generally used in all segments of the poultry industry.

Chickens:

Rock Cornish Game Hen or Cornish Game Hen
A Rock Cornish game hen or Cornish game hen is a young immature chicken (usually 5 to 6 weeks of age), weighing not more than 2 pounds ready-to-cook weight, which was prepared from a Cornish chicken or the progeny of a Cornish chicken crossed with another breed of chicken.

Rock Cornish Fryer, Roaster, or Hen
A Rock Cornish fryer, roaster, or hen is the progeny of a cross between a purebred Cornish and a purebred Rock chicken, without regard to the weight of the carcass involved. The terms "fryer," "roaster," and "hen" shall apply only if the carcasses are from birds with ages and characteristics that qualify them for such designation under the following paragraphs.

Broiler or Fryer
A broiler or fryer is a young chicken (usually under 13 weeks of age) of either sex that is tender-meated, with soft, pliable, smooth-textured skin and flexible breastbone cartilage.

Roaster or Roasting Chicken
A bird of this class is a young chicken (usually under 5 months of age) of either sex that is tender-meated, with soft, pliable, smooth-textured skin and breastbone cartilage that may be somewhat less flexible than that of a broiler or fryer.

Capon
A capon is a surgically unsexed male chicken (usually under 8 months of age) that is tender-meated, with soft, pliable, smooth-textured skin.

Hen, Fowl, or Baking or Stewing Chicken
A bird of this class is a mature female chicken (usually more than 10 months of age) with meat less tender than that of a roaster or roasting chicken and nonflexible breastbone tip.

Cock or Rooster
A cock or rooster is a mature male chicken with coarse skin, toughened and darkened meat, and hardened breastbone tip.

Turkeys:

Fryer-Roaster Turkey
A fryer-roaster turkey is a young immature turkey (usually under 16 weeks of age) of either sex that is tender-meated, with soft, pliable, smooth-textured skin, and flexible breastbone cartilage. Sex designation is optional. For labeling purposes, it may be designated as "young turkey."

Young Turkey
A young turkey is a turkey (usually under 8 months of age) that is tender-meated, with soft, pliable, smooth-textured skin and breastbone cartilage that is somewhat less flexible than in a fryer-roaster turkey. Sex designation is optional.

Yearling Turkey
A yearling turkey is a fully matured turkey (usually under 15 months of age) that is reasonably tender-meated and with reasonably smooth-textured skin. Sex designation is optional.

Mature Turkey or Old Turkey (Hen or Tom)
A mature or old turkey is an old turkey of either sex (usually in excess of 15 months of age) with course skin and toughened flesh.

Ducks:

Broiler Duckling or Fryer Duckling
A broiler duckling or fryer duckling is a young duck (usually under 8 weeks of age) of either sex that is tender-meated and has a soft bill and soft windpipe.

Roaster Duckling
A roaster duckling is a young duck (usually under 16 weeks of age) of either sex that is tender-meated and has a bill that is not completely hardened and a windpipe that is easily dented.

Mature Duck or Old Duck
A mature duck or an old duck is a duck (usually over 6 months of age) of either sex with toughened flesh, hardened bill, and hardened windpipe.

Geese:

Young Goose
A young goose may be of either sex, is tender-meated, and has a windpipe that is easily dented.

Mature Goose or Old Goose
A mature goose or old goose may be of either sex and has toughened flesh and hardened windpipe.

Guineas:

Young Guineas
A young guinea may be of either sex, is tender-meated, and has a flexible breastbone cartilage.

Mature Guinea or Old Guinea
A mature guinea or an old guinea may be of either sex, has toughened flesh, and a hardened breastbone.

Pigeons:

Squab
A squab is a young immature pigeon of either sex and is extra tender-meated.

Pigeon
A pigeon is a mature pigeon of either sex, with coarse skin and toughened flesh.

B. Standards for Quality of Ready-to-Cook Individual Carcasses and Parts

Carcasses and Parts—A Quality:

Conformation The carcass or part is free of deformities that detract from its appearance or that affect the normal distribution of flesh. Slight deformities, such as slightly curved or dented breastbones and slightly curved backs, may be present.

Fleshing The carcass has a well-developed covering of flesh considering the kind, class, and part.

(1) The breast is moderately long and deep, and has sufficient flesh to give it a rounded appearance with the flesh carrying well up to the crest of the breastbone along its entire length.

(2) The leg is well fleshed and moderately thick and wide at the knee and hip joint area, and has a well-rounded, plump appearance with the flesh carrying well down toward the hock and upward to the hip joint area.

(3) The drumstick is well fleshed and moderately thick and wide at the knee joint, and has a well-rounded, plump appearance with the flesh carrying well down toward the hock.

(4) The thigh is well to moderately fleshed.

(5) The wing is well to moderately fleshed.

Fat Covering The carcass or part, considering the kind, class, and part, has a well-developed layer of fat in the skin. The fat is well distributed so that there is a noticeable amount of fat in the skin in the areas between the heavy feather tracts.

Defeathering The carcass or part has a clean appearance, especially on the breast. The carcass or part is free of pinfeathers, diminutive feathers, and hairs which are visible to the grader.

Exposed Flesh Parts are free of exposed flesh, resulting from cuts, tears, and missing skin (other than slight trimming on the edge). The carcass is free of these defects on the breast and legs. Elsewhere, the carcass may have cuts or tears that do not expand or significantly expose flesh, provided the aggregate length of all such cuts and tears does not exceed three-quarter inch for poultry weighing up to 2 pounds; 1 1/2 inches for poultry weighing over 2 pounds, but not more than 6 pounds; 2 inches for poultry weighing over 6 pounds, but not more than 16 pounds; and 3 inches for poultry weighing over 16 pounds. The carcass may have exposed flesh elsewhere other than on the breast and legs due to slight cuts, tears, and areas of missing skin, provided the aggregate area of all exposed flesh does not exceed an area equivalent to the area of a circle of the diameter specified in the following table:

Table 1. Exposed Flesh, A Quality.

Carcass weight		Maximum aggregate area permitted	
Minimum	Maximum	Breast and legs	Elsewhere
None	2 lb.	None	1 in.
Over 2 lb.	6 lb.	do	1 1/2 in.
Over 6 lb.	16 lb.	do	2 in.
Over 16 lb.	None	do	3 in.

Disjointed and Broken Bones and Missing Parts Parts are free of broken bones. The carcass is free of broken bones and has not more than one disjointed bone. The wing tips may be removed at the joint, and in the case of ducks and geese, the parts of the wing beyond the second joint may be removed, if removed at the joint and both wings are so treated. The tail may be removed at the base. Cartilage separated from the the breastbone is not considered as a disjointed or broken bone.

Discolorations of the Skin and Flesh The carcass or part is practically free of such defects. Discolorations due to bruising shall be free of clots (discernible clumps of red or dark cells). Evidence of incomplete bleeding, such as more than an

occasional slightly reddened feather follicle, is not permitted. Flesh bruises and discolorations of the skin, such as "blue back," are not permitted on the breast or legs of the carcass or on these individual parts, and only lightly shaded discolorations are permitted elsewhere. The total areas affected by flesh bruises, skin bruises, and discolorations, such as "blue back," singly, or in any combination, shall not exceed one-half of the total aggregate area of permitted discoloration. The aggregate area of all discolorations for a part shall not exceed an area equivalent to the area of a circle one-fourth inch in diameter for poultry weighing up to 6 pounds and one-half inch in diameter for poultry weighing over 6 pounds. The aggregate area of all discolorations for a carcass shall not exceed an area equivalent to the area of a circle of the diameter specified in the following table:

Table 2. Discolorations, A Quality.

Carcass weight		Maximum aggregate area permitted	
Minimum	Maximum	Breast and legs	Elsewhere
None	2 lb.	3/4 in.	1 1/4 in.
Over 2 lb.	6 lb.	1 in.	2 in.
Over 6 lb.	16 lb.	1 1/2 in.	2 1/2 in.
Over 16 lb.	None	2 in.	3 in.

Freezing Defects With respect to consumer packaged poultry, parts, or specified poultry food products, the carcass, part, or specified poultry food product is practically free from defects which result from handling or occur during freezing or storage. The following defects are permitted if they, alone or in combination, detract only very slightly from the appearance of the carcass, part, or specified poultry food product:

(1) Slight darkening over the back and drumsticks, provided the frozen bird or part has a generally bright appearance;

(2) Occasional pockmarks due to drying of the inner layer of skin (derma) (however, none may exceed the area of a circle one-eighth inch in diameter for poultry weighing 6 pounds or less and one-fourth inch in diameter for poultry weighing over 6 pounds);

(3) Occasional small areas showing a thin layer of clear or pinkish colored ice.

Backs A quality backs shall meet all applicable provisions pertaining to parts and shall include the meat contained on the ilium (oyster), pelvic meat and skin, and vertebral ribs and scapula with meat and skin.

Carcasses and Parts—B Quality:

Conformation The carcass or part may have moderate deformities, such as a dented, curved, or crooked breast; crooked back; or misshapen legs or wings, which do not materially affect the distribution of flesh or the appearance of the carcass or part.

Fleshing The carcass has a moderate covering of flesh considering the kind, class, and part.

(1) The breast has a substantial covering of flesh, with the flesh carrying up to the crest of the breastbone sufficiently to prevent a thin appearance.

(2) The leg is fairly thick and wide at the knee and hip joint area and has sufficient flesh to prevent a thin appearance.

(3) The drumstick has a sufficient amount of flesh to prevent a thin appearance, with the flesh carrying fairly well down toward the hock.

(4) The thigh has a sufficient amount of flesh to prevent a thin appearance.

(5) The wing has a sufficient amount of flesh to prevent a thin appearance.

Fat Covering The carcass or part has sufficient fat in the skin to prevent a distinct appearance of the flesh through the skin, especially on the breast and legs.

Defeathering The carcass or part may have a few nonprotruding pinfeathers or vestigial feathers which are scattered sufficiently so as not to appear numerous. Not more than an occasional protruding pinfeather or diminutive feather shall be in evidence under a careful examination.

Exposed Flesh A carcass may have exposed flesh, provided that no part on the carcass has more than one-third of the flesh exposed and the meat yield of any such part on the carcass is not appreciably affected. A part may have no more than one-third of the flesh normally covered by skin exposed. A moderate amount of meat may be trimmed around the edges of a part to remove defects.

Disjointed and Broken Bones and Missing Parts Parts may be disjointed, but are free of broken bones. The carcass may have two disjointed bones, or one disjointed bone and one nonprotruding broken bone. Parts of the wing beyond the second joint may be removed at a joint. The tail may be removed at the base. The back may be trimmed in an area not wider than the base of the tail and extending from the tail to the area halfway between the base of the tail and the hip joints.

Discolorations of the Skin and Flesh The carcass or part is free of serious defects. Discoloration due to bruising shall be free of clots (discernible clumps of red or dark cells). Evidence of incomplete bleeding shall be no more than very slight. Moderate areas of discoloration due to bruises in the skin or flesh and moderately shaded discoloration of the skin, such as "blue back," are permitted, but the total areas affected by such discolorations, singly or in any combination, may not exceed one-half of the total aggregate area of permitted discoloration. The aggregate area of all discolorations for a part shall not exceed an area equivalent to the area of a circle having a diameter of one-half inch for poultry weighing up to 2 pounds; 1 inch for poultry weighing over 2 pounds, but not more than 6 pounds; and 1 1/2 inches for poultry weighing over 6 pounds. The aggregate area of all discolorations for a carcass shall not exceed an area equivalent to the area of a circle of the diameter specified in the following table:

Table 3. Discolorations, B Quality

Carcass weight		Maximum aggregate area permitted	
Minimum	Maximum	Breast and legs	Elsewhere
None	2 lb.	1 1/4 in.	2 1/4 in.
Over 2 lb.	6 lb.	2 in.	3 in.
Over 6 lb.	16 lb.	2 1/2 in.	4 in.
Over 16 lb.	None	3 in.	5 in.

Freezing Defects With respect to consumer packaged poultry, parts, or specified poultry food products, the carcass, part, or specified poultry food product may have moderate defects which result from handling or occur during freezing or storage. The skin and flesh shall have a sound appearance but may lack brightness. The carcass or part may have a few pockmarks due to drying of the inner layer of skin (derma). However, no single area of overlapping pockmarks may exceed that of a circle one-half inch in diameter. Moderate areas showing layers of clear pinkish or reddish colored ice are permitted.

Backs B quality backs shall meet all applicable provisions pertaining to parts, and shall include either the meat contained on the ilium (oyster) and meat and skin from the pelvic bones or the vertebral ribs and scapula with meat and skin.

Carcasses and Parts—C Quality:

(a) A part that does not meet the requirements for A or B quality may be of C quality if the flesh is substantially intact.

(b) A carcass that does not meet the requirements for A or B quality may be C quality. Both wings may be removed or neatly trimmed. Trimming of the breast and legs is permitted, but not to the extent that the normal meat yield is materially affected. The back may be trimmed in an area not wider than the base of the tail and extending from the tail to the area between the hip joints.

C quality backs shall include all the meat and skin from the pelvic bones, except that the meat contained in the ilium (oyster) may be removed. The vertebral ribs and scapula with meat and skin and the backbone located anterior (forward) of the ilia bones may also be removed (front half of back).

C. Standards for Quality of Specified Poultry Food Products

Poultry Roast—A Quality:

This standard applies to raw poultry products labeled in accordance with the poultry inspection regulations as ready-to-cook "Roasts" or similar descriptive terminology.

(a) The deboned poultry meat used in the preparation of the product shall be from young poultry.

(b) Bones, tendons, cartilage, blood clots, and discolorations shall be removed from the meat.

(c) All pinfeathers, bruises, hair, discolorations, and blemishes shall be removed from the skin, and where necessary, excess fat shall be removed from the skin covering the crop area or other areas.

(d) Seventy-five percent or more of the outer surface of the product shall be covered with skin, whether attached to the meat or used as a wrap. The skin shall not appreciably overlap at any point. The combined weight of the skin and fat used to cover the outer surface and that used as a binder shall not exceed 15 percent of the total net weight of the product.

(e) The product shall be fabricated in such a manner that it can be sliced after cooking, and each slice can be served with minimal separation.

(f) Seasoning or flavor enhancers, if used, shall be uniformly distributed.

(g) Product shall be fabricated or tied in such a manner that it will retain its shape after defrosting and cooking.

(h) Packaging shall be neat and attractive.

(i) Product shall be practically free of weepage after packaging and/or freezing, and, if frozen, shall have a bright, desirable color.

(j) Product packaged in an oven-ready container shall meet all the requirements of paragraphs (a) through (i) of this section, except that with respect to skin covering, the exposed surface of the roast need not be covered with skin. If skin is used to cover the exposed surface, it may be whole or emulsified. Additionally, for roasts packaged in oven-ready containers, comminuted (mechanically deboned) meat may be substituted in part for skin, but may not exceed 8 percent of the total weight of the product.

Boneless Poultry Breast and Thigh—A Quality:

These standards apply to raw poultry products labeled as ready-to-cook boneless poultry breasts or thighs, or as ready-to-cook boneless poultry breast fillets or thigh fillets, or with words of similar import.

(a) The breast or thigh shall be cut as specified in figures 15, 16, or 21, respectively.

(b) The bone or bones shall be removed in a neat manner without undue mutilation of adjacent muscle.

(c) With skin, the breast or thigh shall meet A quality requirements for ready-to-cook poultry parts for defeathering, exposed flesh, and discolorations, and shall be free of tendons and cartilage.

(d) Skinless breasts or thighs shall be free of tendons, cartilage, blood clots, and discolorations. Minor abrasions due to preparation techniques are permitted.

(e) Slight trimming is permitted around the edges and inner muscle surface of the part.

D. Grades for Ready-to-Cook Poultry and Specified Poultry Food Products

Regulations currently provide for both consumer and procurement grades that are based on the U.S. standards; although, consumer grades are used almost exclusively. If this trend continues, procurement grades could become obsolete from disuse.

U.S. Consumer Grades for Ready-to-Cook Poultry and Specified Poultry Food Products:

U.S. Grade A
A lot of ready-to-cook poultry, parts, or poultry food products consisting of one or more ready-to-cook carcasses or parts, or individual units of poultry food products of the same kind and class, each of which conforms to the requirements for A quality, may be designated as U.S. Grade A.

U.S. Grade B
A lot of ready-to-cook poultry or parts consisting of one or more ready-to-cook carcasses or parts of the same kind and class, each of which conforms to the requirements for B quality or better, may be designated as U.S. Grade B.

U.S. Grade C
A lot of ready-to-cook poultry or parts consisting of one or more ready-to-cook carcasses or parts of the same kind and class, each of which conforms to the requirements for C quality or better, may be designated as U.S. Grade C.

U.S. Procurement Grades for Ready-to Cook Poultry:

U.S. Procurement Grade I
Any lot of ready-to-cook poultry composed of one or more carcasses or parts of the same kind and class may be designated and identified as U.S. Procurement Grade I when:

(A) 90 percent or more of the carcasses or parts in such lot meet the requirements of A quality, with the following exceptions: (1) fat covering and conformation may be as described in this manual for B quality; (2) trimming of skin and flesh to remove defects is permitted to the extent that not more than one-third of the flesh is exposed on a separated part or on any part on a carcass, and the meat yield of a separated part or any part on a carcass is not appreciably affected; (3) discoloration of the skin and flesh may be as described in this manual for B quality; (4) one or both drumsticks on a carcass may be removed if the part is severed at the joint; (5) the back on a carcass may be trimmed in an area not wider than the base of the tail and extending to the area between the hip joints; (6) the wings or parts of wings on a carcass may be removed if severed at a joint;

(B) the balance of the carcasses or parts meet the same requirements, except they may have only a moderate covering of flesh.

U.S. Procurement Grade II
Any lot of ready-to-cook poultry composed of one or more carcasses or parts of the same kind and class which fails to meet the requirements of U.S. Procurement Grade I may be designated and identified as U.S. Procurement Grade II, Provided, That (a) trimming of flesh from a separated part or from any part on the carcass does not exceed 10 percent of the meat, and (b) portions of a carcass weighing not less than one-half of the whole carcass may be included, if the portion approximates in percentage the meat to bone yield of the whole carcass.

Table 4.

Ready-to Cook Poultry

Summary of Specifications for Standards of Quality for Individual Carcasses and Parts

(Not All Inclusive)

(Minimum Requirements and Maximum Defects Permitted)

Factor	A Quality	B Quality	C Quality
Conformation:	Normal	Moderate deformities	Abnormal
Breastbone	Slight curve or dent	Moderately dented, curved or crooked	Seriously curved or crooked
Back	Normal (except slight curve)	Moderately crooked	Seriously crooked
Legs and Wings	Normal	Moderately misshapen	Misshapen
Fleshing:	Well fleshed; moderately long, deep and rounded breast	Moderately fleshed, considering kind, class and part	Poorly fleshed
Fat Covering:	Well covered -- especially between heavy feather tracts on breast and considering kind, class and part	Sufficient fat on breast and legs to prevent distinct appearance of flesh through the skin	Lacking in fat covering over all parts of carcass
Defeathering:			
Nonprotruding pins and hair	Free	Few scattered	Scattering
Protruding pins	Free	Occasional	Occasional

Exposed Flesh:

Carcass Weight		A Quality			B Quality			C Quality
Minimum	**Maximum**	**Breast and Legs**	**Elsewhere[1]**	**Part**	**Breast and Legs[2]**	**Elsewhere[2]**	**Part**	
None	**2 lbs.**	None	1"	Slight	1/3 of flesh exposed on each part on carcass provided meat yield not appreciably affected		1/3 of flesh exposed -- meat yield not appreciably affected	No limit
Over 2 lbs.	**6 lbs.**	None	1 1/2"	trim on				
Over 6 lbs.	**16 lbs.**	None	2"	edge				
Over 16 lbs.	**None**	None	3"					

Discolorations:[3]

None	**2 lbs.**	3/4"	1 1/4"	1/4"	1 1/4"	2 1/4"	1/2"	No limit[4]
Over 2 lbs.	**6 lbs.**	1"	2"	1/4"	2"	3"	1"	
Over 6 lbs.	**16 lbs.**	1 1/2"	2 1/2"	1/2"	2 1/2"	4"	1 1/2"	
Over 16 lbs.	**None**	2"	3"	1/2"	3"	5"	1 1/2"	

Disjointed and Broken Bones:	Carcass-- 1 disjointed and no broken Parts-- none	Carcass-- 2 disjointed and no broken or 1 disjointed and 1 nonprotruding broken Parts-- may be disjointed, no broken	No limit
Missing Parts: (Whole carcass only)	Wing tips and tail[5]	Wing tips, 2nd wing joint and tail Back area not wider than base of tail and extending half way between base of tail and hip joints.	Wing tips, wings and tail Back area not wider than base of tail extending to area between hip joints
Freezing Defects: (Consumer packaged)	Slight darkening on back and drumstick. Overall bright appearances. Occasional pockmarks due to drying. Occasional small areas showing layer of clear or pinkish ice.	May lack brightness. Few pockmarks due to drying. Moderate areas showing layer of clear, pinkish, or reddish colored ice.	Numerous pockmarks and large dried areas.

[1] Maximum aggregate area of all exposed flesh due to cuts, tears, and missing skin. In addition, carcass may have cuts or tears that do not expand or significantly expose flesh, provided the total aggregate length does not exceed the permitted tolerance for the weight range.

[2] For purposes of definition, the parts of the carcass shall be each wing, leg, entire back, and entire breast with each permitted to have one-third of the flesh exposed by cuts, tears, and missing skin.

[3] Flesh bruises and discolorations such as "blue back" are not permitted on breast and legs of A quality carcass or on these individual parts. Not more than one-half of total aggregate area of discolorations may be due to flesh bruises or "blue back" (when permitted) and skin bruises in any combination.

[4] No limit on size and number of areas of discoloration and flesh bruises if such areas do not render any part of the carcass unfit for food.

[5] In ducks and geese, the parts of the wing beyond the second joint may be removed, if removed at the joint and both wings are so treated. Tail must be removed at base.

Figure 25. Guide for estimating the relative size of exposed flesh or discolorations.

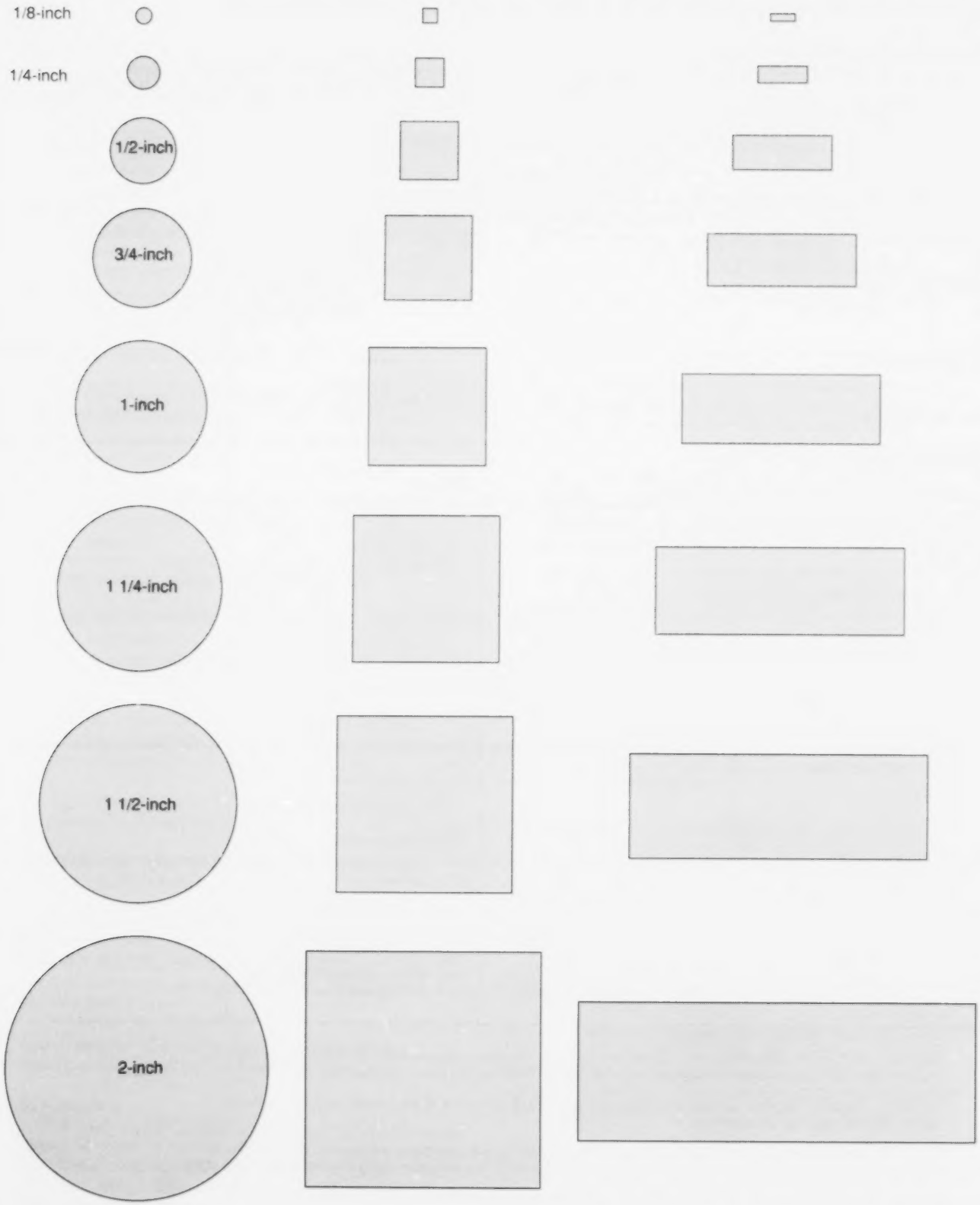


Figure 25 continued.

V. Grading According to Special Requirements

The Poultry Division provides services in addition to the grading of poultry according to the U.S. standards and grades. Basically, these services involve determining the compliance of poultry products with the purchase or processing contracts of institutional food buyers. This type of food acceptance or certification work has been growing.

- More and more value-added poultry products are available that look less and less like whole carcasses and parts. Buyers often cannot identify what they have bought as easily as they could when only ice-packed whole birds were available.

- The food service industry continues to expand, especially fast food-type establishments. While each company has its own menu identity, all units within a company have uniform food purchase requirements.

- Government purchasers such as the military, hospitals, and schools must utilize competitive bidding to help control their food purchasing and processing costs.

USDA grading specialists can help food purchasers prepare explicit product specifications and can certify that purchases comply with these specifications. This helps assure purchasers that they are getting what they order, facilitates competitive bidding, can result in overall higher quality food, permits long-range meal planning, and eliminates controversies between the buyer and seller over compliance of the products.

Depending upon the purchase specification, poultry and poultry products can be examined to determine compliance with the requirements for:

- Quality of raw materials, including grade of poultry used.
- Product formulation and percentage of ingredients.
- Batter breading pickup and coverage.
- Product weight, dimension, temperature, freedom from defects.
- Condition of product packaging, such as freedom from cuts, tears, holes.
- Metal detection.
- Condition of shipping containers and transportation vehicles.

The number of samples examined and the number of defects allowed in a sample or production lot are outlined in Poultry Division online AQL sample plans.

VI. Grading Live Poultry

Modern poultry industry practices make the grading of live and dressed poultry unnecessary and all provisions for it were deleted from the regulations in 1976. The former official five poultry grade standards are retained in this manual, however, as suggested standards for the use of student judging teams, vocational agriculture classes, and college agriculture courses.

Determining Condition

Condition refers to evidences of disease or other factors which may render the birds unfit for human food. The term "reject" is not a standard of quality. However, a grader may use this term to indicate that an individual live bird is affected by, or shows evidence of, any disease or condition (including, but not limited to, large flesh bruises, severe discolorations, severe injury, and emaciation) which may render the bird or any part of it unfit for human food.

In general, birds should be watched for the following symptoms: definite discolorations of comb and wattles; lameness and droopiness; greenish, yellowish, brownish, or bloody diarrhea; gasping, sneezing, or rattling in throat; nasal discharges; swelling of sinuses or discharges from the eyes; fever; abnormal growths or swellings; emaciation; and a general lack of vigor and vitality as shown by the action of the bird. Other indications of disease are: skin and flesh darker than normal, comb and wattles shrunken, the shanks pinched or shrunken, and the skin and flesh with a doughy consistency.

Birds showing evidence of any disease or other condition which may render them unwholesome or unfit for human food shall not be included in any of the quality designations.

The fact that a bird has some condition which causes it to be classified as a reject does not necessarily mean that it must be destroyed. Parts or all of the bird might be found, upon evisceration and inspection, to be suitable for human food.

Determining Class

Each class of poultry has distinctive characteristics which enable the grader to properly classify an individual bird or lot. The list of characteristics in Table 5 is not all inclusive, but it is complete enough to enable the grader to do a good job. A lot of poultry containing two or more classes would be described as a "mixed class."

Sex does not become a factor in classing poultry until the natural differences in the body conformation and distribution of flesh become quite evident. Table 6 lists some of these differences. This never happens in such classes as geese and most breeds of ducks.

Table 5. Indications of Age in Live Poultry.

	Young Birds	Mature Birds
Comb (chickens)	Pliable, resilient, not wrinkled, points sharp.	Wrinkled, coarser, thicker points, rounded.
Bill (ducks)	Pliable—Not completely hardened.	Hardened.
Plumage	Fresh, glossy appearance.	Faded, worn except in birds which have recently molted.
Fat	Smooth layers with brighter color. Not lumpy over feather tracts.	Generally darker in color, inclined to lumpiness over heavy feather tracts.
Breastbone	Cartilage, if present, pliable and soft.	End of keel hardened cartilage, bony.
Pinbones	Pliable.	Not pliable.
Shanks	Scales on shanks, smooth, small.	Scales, larger, rough, and slightly raised.
Oil Sac	Small, soft.	Enlarged, often hardened.
Spurs (male chickens, turkeys, occasionally adult females).	Small, undeveloped, corn-like.	Spurs gradually increase in length with age, becoming somewhat curved and sharper. Hens often have fine, sharp spurs after first year.
Wind pipe Ducks, Geese	Easily dented.	Hardened, almost bony-like to the touch.
Flesh	Tender meated, translucent appearance. Fine texture.	Coarser texture, darker, hardened muscle fibers.
Drumsticks	Lacking in development, muscles easily dented.	Generally rounded, full, firm.

Table 6. Indications of Sex in Live Poultry.

	Males	Females
Head	Usually larger with larger and longer attachments, such as comb and wattles, coarser than that of females in appearance.	Smaller, rather fine and delicate in appearance compared with males. Hen turkeys have hair on center line of head.
Plumage	Feathers usually long and pointed at the ends. Tail feathers in chickens long and curved. Parti-colored varieties have more brilliant colors than have the females. Most male ducks have a curl in the tail feathers.	Feathers inclined to be shorter and more blunt than those of the male. Tail feathers short and straight in comparison with the male. Modest colors in parti-colored varieties.
Body	Larger and generally more angular than the female. Depth from keel to back greater on same weight birds. Bones, including shanks, longer, larger, and coarser.	Finer boned, body more rounded.
Skin	Slightly coarser, particularly in old birds. Feather follicles larger. Less fat under skin between heavy feather tracts and over back.	Smoother, generally a better distribution of fat between feather tracts. Feather tracts narrower but carrying more fat.
Keel	Longer with fleshing tending to taper at the base.	Shorter with more rounded appearance over the breast.
Legs	Drumstick and thigh relatively long with flesh tending to show less full until mature.	Drumstick and thigh relatively shorter with drumstick more inclined to roundness, increasingly so with age.

Quality Factors for Individual Birds

Health and Vigor

A bird of high vitality usually has a strong, well-proportioned head with full, round, bright, alert eyes. The comb will be bright and of good texture. The plumage is usually glossy and clean due to the bird's natural desire to preen itself. The oil gland will be full of oil. The feathers around the vent usually will be clean and dry. The feathers on the body fit closely even on laying fowl which have been in production for some time and may have lost feathers due to partial molting.

A bird would be classified as having good health and vigor even though it was somewhat lacking in the conditions listed for a bird of high vitality. It should not be listless. The body feathers should be reasonably close. The feathers around the vent may show some soiling. The comb should be reasonably bright.

Birds lacking in vigor may be listless. The comb may be dark or pale. The feathers may be loose and ruffled. There may be a considerable amount of soiling around the vent.

Feathering

The primary concern with the feathering of a bird is the presence of pinfeathers, particularly those just coming through the skin, and with bare, discolored areas and areas containing broken quills. Well-feathered birds are those which can be readily processed into ready-to-cook A quality birds. Pinfeathers, areas discolored because of broken quills, or sunburn from inadequate feathering lower the quality of the bird.

Conformation

The ideal shape of a meat bird approaches that of a rectangle. Such structure allows ample room for the digestive organs and circulatory system. Properly fed, a bird of this type is more apt to take on good flesh and fat cover. Some of the common defects a thorough examination may reveal are breasts that are dented, crooked, knobby, V-shaped, or slab sided; backs that are narrow, crooked, or hunched; legs and wings that are deformed; and bodies that are definitely wedge shaped.

Fleshing

The amount and distribution of flesh on the bird determines its attractiveness to a considerable degree. The drumsticks, thighs, and breast carry the bulk of the flesh, and these parts should be examined closely. The common defects in fleshing are breasts that do not carry width well back to the end of the keel, breasts that are V-shaped or concave rather than full and rounded, legs and drumsticks that are thin, and backs that are not moderately well fleshed along the vertebrae and around the hip bones.

Fat

One of the first things to look for is the amount of fat in the skin. Without a good fat cover, a well-fleshed bird loses a great deal of its eye appeal. The most common defects are lack of fat cover in the skin between the heavy feather tracts, lack of fat in the collar of the wishbone in chickens, lack of fat where the thigh skin joins the breast, and thin skin over the abdomen. The web of the wing indicates the degree of fat cover. The skin of the abdomen pinched between the thumb and fingers is a good indicator.

Degree of Freedom from Defects

Tears and broken or disjointed wings are found infrequently in live birds. The wings and breast should be examined carefully for skin and flesh bruises. Since most of these defects occur when handling the birds, the grader should take care so that bruising and breaking bones will be minimized.

Common defects which are apt to be prevalent in some flocks and entirely absent in others are watery breast blisters, heavy callouses on the breast; insect bites which may be slightly reddened or infected (such as chiggers or red bugs), and discolorations due to broken quills and picking, such as bare backs, blue tail, or blue backs due to normal pigment concentrated in certain areas from damaged immature feathers of colored varieties of turkeys. Blue back in turkeys may also be due to a condition known as dermal melanosis, which is genetic and not due to feather damage.

Combining Quality Factors

In placing a bird in its proper quality classification, it is important to remember that each individual quality grading factor has to be evaluated and that the final quality of the bird is established on the basis of the lowest quality grading factor. For example, a bird may be of A quality in all except one quality grading factor. Assuming that this factor is B quality, the final classification of the bird would be B quality. Any defects which would make the bird unfit for slaughter for human food are not included in the standards of quality.

Suggested Standards of Quality

The standards are summarized in Table 7.

Live Poultry—A or No. 1 Quality:

To be of A or No. 1 quality, the live bird--
Is alert, has bright eyes, and is of good health and vigor.

Is well feathered, with feathers quite thoroughly covering all parts of the body, and may have a slight scattering of pinfeathers.

Is of normal physical conformation. (Slight deformities which do not affect the normal distribution of the flesh and do not detract from the appearance of the carcass are permitted.)

Table 7. Summary of Suggested Standards of Quality for Live Poultry on an Individual Bird Basis
(Minimum Requirements and Maximum Defects Permitted)

Factor	A or No. 1 Quality	B or No. 2 Quality	C or No. 3 Quality
HEALTH AND VIGOR	Alert, bright eyes, healthy, vigorous	Good health and vigor	Lacking in vigor
FEATHERING	Well covered with feathers	Fairly well covered with feathers	Complete lack of plumage feathers on back
PINFEATHERS	Slight scattering of pinfeathers	Moderate number of pinfeathers	Large number of pinfeathers
CONFORMATION	Normal	Practically normal	Abnormal
Breastbone	Slight curve 1/8" dent (chickens) 1/4" dent (turkeys)	Slightly crooked	Crooked
Back	Normal (except slight curve)	Moderately crooked	Crooked or hunched back
Legs and wings	Normal	Slightly misshapen	Misshapen
FLESHING	Well fleshed, moderately broad and long breast	Fairly well fleshed	Poorly developed, narrow breast, thin covering of flesh
FAT COVERING	Well covered, some fat under skin over entire carcass Chicken fryers and turkey fryers and young toms only moderate covering No excess abdominal fat	Enough fat on breast and legs to prevent a distinct appearance of flesh through skin Hens or fowl may have excessive abdominal fat	Lacking in fat covering on back and thighs, small amount in feather tracts
DEFECTS	Slight	Moderate	Serious
Tears and broken bones	Free	Free	Free
Bruises, scratches and callouses	Slight skin bruises, and callouses	Moderate (except only slight flesh bruises)	Unlimited to extent no part unfit for food
Shanks	Slightly scaly	Moderately scaly	Seriously scaly

Has a well-developed, moderately broad and long breast, sufficiently well-fleshed so that the breast has a rounded appearance with the flesh carrying well up to the crest of the breastbone and has legs that are well-fleshed.

Has a well developed covering of fat in the skin considering the class, age, and sex of the bird.

May have slight scratches, slight skin bruises, and slight callouses (i.e., slightly thickened, hardened, and darkened areas of skin over the breastbone), if these conditions do not materially affect the appearance of the bird, especially the breast; and may also have slightly scaly shanks; but is otherwise free from tears, broken bones, and breast blisters.

Live Poultry —B or No. 2 Quality:

To be of B or No. 2 quality, the live bird--
Is of good health and vigor.

Is fairly well feathered (i.e., some feathers may be lacking on some parts of the body), and may have a moderate number of pinfeathers.

May have moderate deformities in conformation such as dented, curved, or crooked breast; crooked back; or misshapen legs or wings which do not seriously affect the distribution of the flesh or the appearance of the carcass.

Has sufficient flesh on the breast and legs so as to prevent a thin appearance and a definite breastbone crestline.

Has noticeable fat in the feather tracts of the breast and has sufficient fat in the skin on the breast and legs to prevent a distinct appearance of the flesh through the skin.

Is free from tears, broken bones, flesh bruises, severe breast blisters, heavy callouses (i.e., thickened, hardened, and darkened areas of skin over the breastbone) and seriously scaly shanks; but it may have moderate skin bruises and scratches.

Live Poultry—C or No.3 Quality:

Any live bird, other than one classed as a reject, that does not meet the requirements of A or No. 1 quality, or B or No. 2 quality, may be of C or No. 3 quality. Such birds may--

Be lacking in vigor.

Have a large number of pinfeathers over all parts of the body and complete lack of plumage feathers on the back.

Have definite, but not pronounced deformities (including, but not being limited to, a crooked breastbone, hunchback, and slight crippling).

Be poorly fleshed, but not emaciated.

Have only a small amount of fat in the feather tracts and be completely lacking in fat on back and thighs;

Have serious skin bruises and moderate flesh bruises, and more severe breast blisters than allowed for B or No. 2 quality.

Reject

The term "reject" is not a standard of quality. However, this term may be used to indicate that a live bird shows evidence of having a disease or condition (including, but not limited to, large flesh bruises, severe discolorations, severe injury, and emaciation) which may make it unfit for human food.

Bird Examination

The grader determines the health, vigor, and class by observing the general appearance of the birds in the flock or batteries and then determines the quality and condition by examining the individual bird. Figure 26 shows body configurations of birds with normal and low vitality. The bird should be removed from the coop, cage, or battery as gently as possible. One hand should be placed under the bird with the bird resting on the palm of the hand and the legs held between the fingers. The other hand should be placed on the back and wings of large birds to assist in holding, lifting, and keeping the wings from flapping. The bird is removed head first from the coop, cage, or battery. During the examination, the bird should be held with the head toward the side of the grader.

The bird should rest on the palm of one hand, with the fingers around the hock joint and the head against the grader. The other hand should be free to explore the body structure, muscle development, and to turn back the feathers. The breast is examined first and then the drumsticks. While examining the breast and drumsticks for fleshing, the feathers are turned back by moving the free hand through them against their natural direction. This provides an opportunity to observe the presence of fat deposits under the skin before the feathers fall back in place. In some varieties, the grader must augment his motions with slight puffs of his breath to briefly move back a short dense fluff-like feathering next to the skin. As the fleshing is determined and the amount of fat is observed, the grader also notes the presence of bruises, cut, tears, blisters, callouses, broken or dislocated bones, and the state of development of pinfeathers. Pinfeathers still under the skin or just barely through the skin are quality penalties. After examination of the breast and drumsticks, the same procedure is followed for the back, hips, and wings.

In turkeys, the degree of freedom from pigment in the base of the tail feathers and wing quills is generally indicative of the stage of development of the pinfeathers. When examining turkeys, the grader should look for wing tip bruises and tears or severe scars on the sides and back of the bird.

Whether the grader is handling large or small classes, care should be exercised to prevent the wings from flapping and the birds from struggling--to avoid bruises and other injuries.

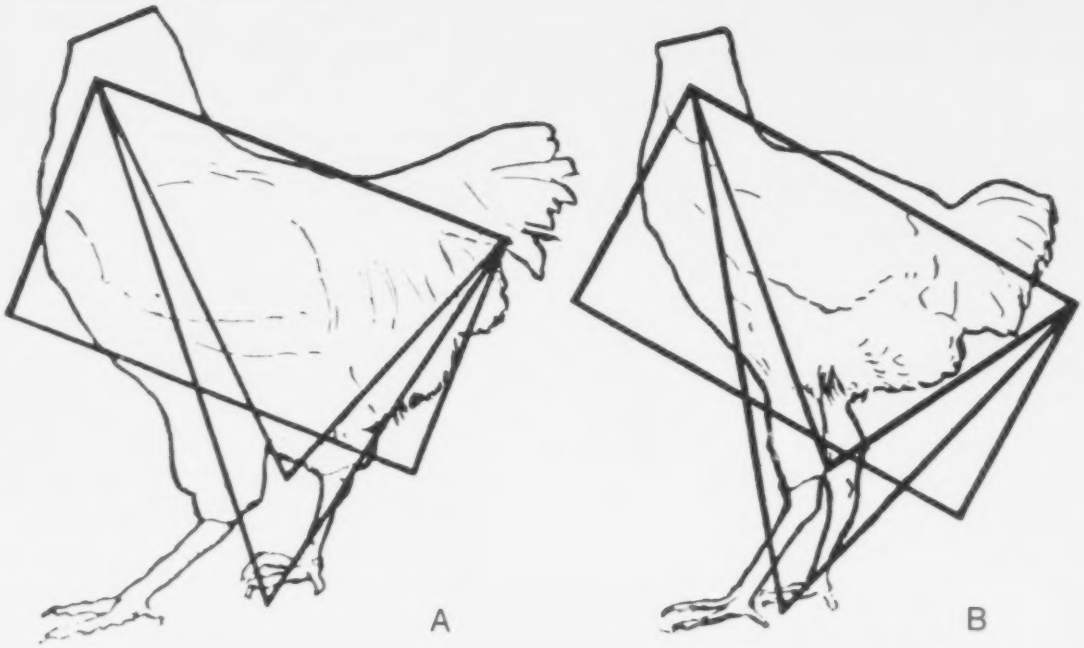


Figure 26. A bird of normal development for the variety (A) will more nearly fill a rectangle than will a bird of low vitality (B) whose body more closely approaches the shape of a triangle. (After Rice, Hall, and Marble: Judging Poultry for Production)

VII. Resource Materials Available

To obtain any of the materials listed below, contact the source listed with each item wanted.

Standardization Branch
Poultry Division
AMS, USDA, Room 3944-South
P. O. Box 96456
Washington, D.C. 20090-6456
(202) 447-2356

7 CFR Part 70 — Free
Regulations Governing the Voluntary Grading of Poultry Products

7 CFR Part 70 Subpart B — Free
U.S. Classes, Standards, and Grades for Poultry (portion of complete regulation)

Poultry Parts Chart — Free
Properly cut poultry parts. Chart, 30" x 24", black and white photos. 1978.

Facts About: Commodity Poultry for Processing (AMS-599) — Free
Further processing contracts for USDA commodity poultry. Two-page reproducible, 1983.

Facts About: Poultry for Volume Food Buyer (AMS-601) — Free
Purchase specifications and Food Acceptance Service. Two-page reproducible. 1983.

Poultry-Grading Manual — For Sale
Guide to the uniform application of U.S. classes, standards, and grades for poultry. Loose-leaf, 28 pages, 3-hole punched. 1988.

Administrative Services Division
FSIS, USDA, Room 0151-South
Washington, D.C. 20250
(202) 447-4661

Technical Information — Free
Catalog of publications about poultry inspection, labeling, plant facilities, equipment, sanitation, and residues.

Learning Resources Center
Virginia Polytechnic Institute
and State University
Blacksburg, Virginia 24061
(703) 961-6000

United States Standards of Quality for Poultry and Poultry Parts — For Sale
Grade assignment for poultry and poultry parts with varying defects and the requirements for labeling of poultry parts cut in different ways. Three-part color slide series with narrative guides. 1986.
Part 1--Whole Fryer. (41 frames)
Part 2--Fryer Parts. (68 frames)
Part 3--Turkey. (45 frames)

Photography Division
OGPA, USDA, Room 4407-South
Washington, D.C. 20250
(202) 447-6633

How to Buy Poultry (C-202) — For Sale
Processing, grading, buying, and handling poultry. Consumer and student oriented. Color slide set (80 frames), with soundtrack on cassette and illustrated narrative guide. 1976.

Photographs — For Sale
Photos in this manual. Black and and white prints.